



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
SEATTLE DISTRICT, CORPS OF ENGINEERS  
P.O. BOX 3755  
SEATTLE, WASHINGTON 98124-2255

3 January 1996

RECEIVED

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AQUATIC RESOURCES UNIT

Operations Division, Technical Support Branch  
Dredged Material Management Office

Greg Bishop  
Solid Waste Program  
King County Health Department  
506 Second Ave., Room 201  
Seattle WA 98101

Re: Kenmore Navigation  
Channel Dredging

Dear Mr. Bishop:

Recent discussions have taken place between your staff, staff at the Department of Ecology and the Navigation Section of the Corps of Engineers regarding the proposed upland disposal of dredged material from the Kenmore Navigation Channel. I have spoken with Terry Clements of your staff, and she has suggested that I provide you with information concerning the evaluation and testing of this dredged material.

Sediments proposed for dredging from the Kenmore Navigation Channel were analyzed according to Puget Sound Dredged Disposal Analysis program guidelines, with sampling occurring in January 1996. As you may know, PSDDA is an inter-agency cooperative program for the management of dredged material in Puget Sound, and the guidelines have been established by the agencies with regulatory authority over dredged material (Ecology, EPA, DNR and the Corps) through a full public process that involved all interested parties. PSDDA requires testing for a standard list of 57 chemicals of concern following specified analytical methods and meeting specified detection limits. PSDDA chemicals of concern have both a screening level and a maximum level. For most chemicals, the screening level is the number at which biological effects have not been found. The maximum level is generally that number above which biological effects are always seen.

Other chemical testing can be required, if there is reason to believe that the chemical may be present in the dredged material. In the case of Kenmore, testing in the Kenmore marina in 1988 had established the presence of tributyltin, commonly used as a marine antifoulant prior to its regulation in 1988. Although the marina is not contiguous to the dredging channel, it was felt that a confirmatory sample on TBT should be taken in the navigation channel. The dredging unit closest to the marina was chosen for this purpose (as a "worst case scenario" for TBT in the navigation channel). Bulk sediment analysis showed the presence of TBT at 74 ppb (reported as TBT). The screening level at the time was 73 ppb (reported as TBT). Exceedance of a PSDDA screening level, by even one part per billion, requires biological testing. In this case, the management unit failed its biological tests, and was therefore found unsuitable for open-water disposal.

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PSDDA sampling in high concern areas requires one sample per 4000 cubic yards. This level of sampling intensity is among the most stringent in the country for dredged material. This sampling is based on the premise that even though a single sample point might miss a "hot spot," the material to be dredged will be mixed during dredging and disposal, and the overall chemical levels for the whole unit will be below effects levels. This sampling and testing approach has been validated by the disposal site monitoring that has taken place. The chemical and biological testing of sediments at the Elliott Bay open-water disposal site have shown no adverse effects from sediment chemistry.

At the time this testing was undertaken, TBT was analyzed in the bulk sediment. Since that time, the PSDDA agencies have concluded that analysis of the porewater is a more accurate measurement. In sediments, TBT is known to bind to organic carbon, and to iron oxides, and may not be bioavailable. To put the 74 ppb of TBT in context, the PSDDA bioaccumulation trigger is 534 ppb (as TBT). The state MTCA clean-up level for TBT is 4800 ppb. Levels up to 800 ppt have been found on the East Coast, and areas of San Diego Bay have reached 1000 ppt.

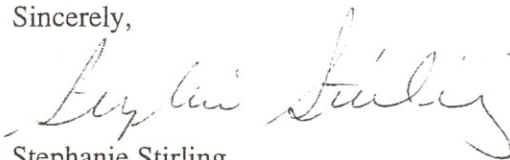
Degradation of TBT depends upon the temperature and the presence of microorganisms. Under aerobic conditions, TBT takes one to three months to degrade. Under anaerobic conditions, the degradation may extend to two years or more.

Forms of TBT are used as a fungicide in agriculture. The lowest level that causes inhalation toxicity in humans is 10 ppm for three minutes. TBT exposure can irritate the skin, eyes and mucous membranes. The fate of TBT in the human system is not clearly known, but one report indicates that it is metabolized within three days. Mice studies have shown that it is excreted unchanged, indicating low absorption by the body.

The proposed dredged material (approximately 8,000 cubic yards) from the Kenmore navigation channel should not be considered a solid waste for upland disposal. Its relatively low levels of tributyltin and the fact that it will be placed outside the aquatic environment (its primary exposure pathway) greatly reduce any cause for concern.

I hope that this information has been of some assistance to the Department of Health in its decision-making. If you would like more information or have any questions, please give me a call (764-6945).

Sincerely,



Stephanie Stirling  
Biologist

Copies Furnished:

Terry Clements/King County  
Judy Aitken/Ecology  
Tom Luster/Ecology  
Justine Barton/EPA

Ted Benson/DNR  
Hiram Arden/NPS-OP-NP  
Mike Scuderi/NPS/EN/PL/ER







SEATTLE DISTRICT  
CORPS OF ENGINEERS  
OPERATIONS DIVISION  
OPERATIONS TECHNICAL SUPPORT BRANCH  
NAVIGATION SECTION

CENPS-OP-TS-NS: (206) 764-3401

FAX: (206) 764-3308

DATE TRANSMITTED: 12 JAN 96PAGES (EXCLUDING COVER): 3TO: Justine Burton EPAFROM: **HIRAM ARDEN** TECHNICAL MANAGERCOMMENTS: FYI

IF THIS FAX HAS BEEN SENT TO YOU IN ERROR, PLEASE CONTACT US AT THE ABOVE PHONE  
NUMBER AND DESTROY ALL COPIES SENT IN ERROR. THANK YOU.



Memo For File

Arden/3401  
6 Dec 95

Subject: Kenmore Barge Navigation Channel ,WA

1. Hiram Arden arranged the meeting to discuss proposed FY96 Kenmore Channel dredging with users at Kenmore. The meeting was held at the office of CSR Asphalt plant located at 6431 N.E. 175th and started at 0700 hrs on 6 Dec 95. The following persons attended the meeting:

Sam Johnson, CSR Asphalt (206) 485-5667  
P.O. Box 82412  
Kenmore, WA 98028

Ric Shrewsbury, V.P.  
Western Towboat Company  
617 N.W. 40th Street  
Seattle, WA 98107 (206) 789-9000

Peter Paget  
Seacoast Towing  
P.O. Box 81161  
Seattle, WA 98108 (206) 443-9418

Hiram Arden  
Corps of Engineers (206) 764-3401

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2. The Kenmore barge navigation channel is a federal project maintained by the Seattle District Corps of Engineers and sponsored by King County. The King County, Surface Water Management office point of Contact is Ms. Susan Perkins (206) 296-6519. The Kenmore Channel was constructed in 1981 and maintenance dredged in 1986. Approximately 35,000 cubic yards of dredging is proposed in the summer 1996. The barge channel has an authorized width of 100-120 feet and depth of 15 feet. The current controlling depths are about 13 feet deep from the low lake level of 20.0 feet MLLW. The initial construction dredging in 1991 and subsequent maintenance dredging (including a minor 40 foot widening area at the confluence of the barge channel and the Sammamish River) in 1986 was performed to a required dredging depth of 17 feet with an additional 2 feet of allowable overdepth. About 500 feet of channel in front of Kenmore Air was dredged to a slightly lesser depth due to geotechnical concern. The Corps has been receiving increased complaints of vessel groundings. Ms. Caroline Gray, Harbormaster at the Harbor Village Marina (206) 485-7557 has relayed reports of groundings in addition to concerns expressed by Seacoast Towing and Western Towboat Company.





3. Sam Johnson said that the asphalt plant has been in operation at the present location for the past 13 years. Lonestar Northwest and CSR Asphalt recently renewed their leases for 15 more years. The annual tonnage of aggregate for the asphalt plant alone is approximately 350,000 tons. Most of the aggregate comes by barge from Canada. Western Towboats' tug is 90 feet long with a 26 foot beam and 13-16 feet of draft. Their present barge is 250 feet long with a 70 foot beam and 16 foot draft (5,200 ton net). Ric Shrewsbury said that they must light load to use the Kenmore channel. Western Towboat is having a larger barge built 273 feet long with a 68 foot beam and draft of 18 feet (est. 6,500 tons net). Western Towboat makes 1-3 trips per week with an overall yearly average of 1.5 trips per week.

4. Peter Paget, Seacoast Towing makes 1-2 trips per week to supply aggregate to the Lonestar Northwest concrete plant. They are tandem tows (larger barge is 240 feet long with a 65 foot beam and draft of 14 feet, 15 on the stern, the smaller barge is 96 feet long with a 26 foot beam). The load of the larger barge is 4,200 tons and 1,300 tons on the smaller barge. The tug is 96 feet long with 26 foot beam and draft of 11 feet. The seasonal drawdown of Lake Washington adds to their towing difficulty.

5. Other businesses served by the barge channel include Waterfront Construction, Kenmore Air Harbor, Nelbro Packing Company, Harbor Village Marina and Davidsons Marina.

6. Problems caused by shoaling in the barge channel are summarized as follows:

a). Loaded barges enter the channel and buoy #2 is offset about 50 feet to the east of the edge of the channel which causes the tows to crowd the east channel slope until the transition at the channel angle point where the barges tend to the west channel slope. Buoy #2 has been replaced many times. Once the tow is through the angle point then the difficulty is to avoid the floatplanes at Kenmore Air and not ground on the shoal (between stations 8+00 and 0+00) near Waterfront Construction. One of the floatplanes is reported to be valued at \$3,000,000.

b). On departing Kenmore the tug operators have difficulty at the angle point near station 13+00. The stern of the tugs agitate the west channel shoal when steering the unloaded barge into the outer channel alignment. In some instances the unloaded barge has been set to the north by winds that has required the tug to back down the channel to deep water in the lake.

7. Sam Johnson said that he will provide the Corps with their annual tonnages for the past 5 years.

  
Hiram Arden  
Project Manager

cc: Jeff Mendenhall, Econ  
Mike Scuderi, ERS  
Merri Mertz, ERS  
Kris Lott, CP  
Stephanie Stirling, DMMO

econ eval.  
1.4 mil tons for 1992-96  
1995 315,000 tons  
1996 350,000 tons  
3,390,000  
1992-96





